

# MARYLAND

## THE BUSINESS OF SPACE SCIENCE

**Summary** *Maryland: The Business of Space Science* seeks to increase the economic and innovation potential of Maryland's space industry by advocating and implementing a series of policy recommendations and strategies in **Science Research & Development, Commercialization, Manufacturing, Satellite Servicing, Space Launch Services, and Workforce & Education**. Our recommendations require the participation and engagement of various state and federal agencies, our Congressional delegation, the Maryland General Assembly, and entities such as the Federal Facilities Advisory Board, economic development organizations, educational institutions and the business community. In order to fully realize the opportunities of the space and science sector, the O'Malley-Brown Administration will:

- I. Create a **Space Development Authority** to coordinate space industry policies and initiatives.
- II. Establish a **Space-Related Business Incubator** with the Maryland Technology Development Corporation (TEDCO).
- III. Partner with Congressional delegation to advocate for a proposed **National Center of Climate & Environmental Information** based in Maryland.
- IV. Engage the Greater Salisbury Committee to develop a **long-term program plan** for the Lower Eastern Shore to position the NASA Wallops Flight Facility as the premier spaceport for light- and medium-lift launches. Consider funding for the Mid-Atlantic Regional Spaceport (MARS) following the plan's adoption.

### Policy Recommendations

#### I. Exploit and Enhance Maryland's Leadership in Space and Earth Science Research & Development

The research and development that occurs in Maryland is the basic building block for any economic activity that follows and provides the raw materials for emerging disciplines like climate change policy. Our unique strengths in other fields can potentially benefit from the application of space science and earth science to contribute innovative solutions to global problems.

Maryland already has unrivaled expertise in space science and earth science. The State is poised to be the leader in climate change and the emerging climate information and services market by virtue of its expertise in earth sciences and location of key research centers and unique assets for the space industry, most notably NASA Goddard Space Flight Center, National Oceanic and Atmospheric Administration (NOAA), Space Telescope Science Institute and The Johns Hopkins University Applied Physics Laboratory (APL).

#### Recommendations | Space Science

- Market Maryland as the Space Science State for study, discovery and technology transfer. Highlight Maryland's leadership in astronomy, astrophysics, heliophysics and planetary science at space conferences and in industry publications.

- Leverage Maryland's Congressional delegation and the Federal Facilities Advisory Board to advocate for space science and earth science missions to be retained by NASA in the face of budget cuts, overseen by NASA Goddard Space Flight Center and managed in Maryland.
- Develop space and earth science business cluster proposals to respond to funding opportunities from the U.S. Economic Development Administration and other agencies.

#### Recommendations | Earth Science

- Promote Maryland as the ideal location for climate information and research, building on an extensive network of operations, measurement, research and analysis across multiple agencies and research centers. Develop and brand the area around Goddard as a Climate Corridor for businesses engaged in climate research and the development of private sector products and services using climate data.
- Compete for the proposed national center of climate and environmental information to be located in Maryland. Work with local leaders and experts in climate change at the University System of Maryland and The Johns Hopkins University (JHU) to build a compelling case for the creation of such a center and support its competitive location in Maryland. Investigate models in related fields such as the National Weather Center at the University of Oklahoma.
- Building on the Memorandum of Understanding between Maryland and NASA Goddard, work with NASA, NOAA, the University System of Maryland, JHU and others to establish a Global Center of Excellence for climate research and product development to address environmental challenges using space-based resources (satellites, sensors and ground truth). Focus on the impact of climate change on the Chesapeake Bay as a model.
- Identify new capabilities for applying space and earth science knowledge which can benefit mankind and expand industries in agriculture, biotechnology, public health and other fields. Maryland has unique resources including the JHU Bloomberg School of Public Health, the National Institutes of Health, the USDA Beltsville Agricultural Research Center and the Food & Drug Administration.

#### 2. Pursue Business Development Opportunities in Space and Earth Sciences and Technology Commercialization to Create New Products, Wealth and Employment

Federal assets are valuable in and of themselves, but the real opportunity lies in creating broader applications for the science they pursue and in generating new business.

#### Recommendations | Small Business & Commercialization

- Partner with NASA Goddard and TEDCO to establish a space-related business incubator adjacent to Goddard's campus or the University of Maryland College Park.
- Work with researchers and entrepreneurs from Maryland's federal facilities and educational institutions to advance the commercialization of space industry technologies, products and services to foster innovation and startup companies.

- Support SMALL Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funding from NASA and other space related agencies to Maryland small businesses.
- Work with the Congressional delegation to explore a federally-chartered technology development authority to commercialize more NASA and other federally-owned technologies from federal laboratories.
- Identify opportunities for new space-related businesses and support their growth with seed funding, angel investors and venture capital. Utilize InvestMaryland to provide seed funding for emerging businesses engaged in the development of products and services using climate data.
- Link small businesses to opportunities through the Contract Connections initiative.

#### Recommendations | Manufacturing, Robotics & Supply Chain Development

- Attract and extend NASA Goddard's and NOAA's supply chain related to space exploration, satellites, instruments and on-orbit services by increasing high-tech manufacturing in Maryland. Expand local awareness of supply chain requirements, making matches with Maryland companies. Encourage additional investment in production facilities by contractors to NASA and NOAA that are already located here. Maximize the manufacturing capability of existing private-sector production facilities in the state.
- Encourage Goddard to take a leadership role in the development of microsatellites in partnership with local education institutions. Leverage Goddard's capabilities in this area to promote industry growth on the Lower Eastern Shore.
- Secure end-user lease agreements at NASA Goddard as a location for small manufacturers.
- Further develop the emerging robotics expertise at Maryland's academic and partner organizations – including Johns Hopkins and APL – to serve as a model for future space science and satellite servicing endeavors.

#### Recommendations | Satellite Servicing

- Build on the experience of servicing the Hubble Space Telescope and take advantage of growing opportunities to service and extend the life of existing and aging satellites.
- Promote hosted payloads that combine small loads and instruments in unified missions as a business opportunity for Maryland companies and universities.

### 3. Building on Wallops – An Opportunity for the Eastern Shore

The emerging commercial space market presents a real opportunity for the Wallops Flight Facility and MARS. As one of the few U.S. spaceports licensed for commercial launch, MARS can compete for a share of the increasing market for commercial launches, representing a growth industry for the Lower Eastern Shore. Other complementary activities at Wallops include the Research Range, FAA-certified runways, an experimental unmanned aerial vehicle (UAV) runway and a NOAA satellite receiving station.

#### Recommendations | Space Launch Services

- Develop the emerging Lower Eastern Shore cluster of space and defense businesses, emphasizing commercial launches from MARS, as well as the research range, mobile systems, UAVs and other aeronautical and space technologies.
- Aggressively market the assets and advantages of MARS to commercial space companies (for example, SpaceX and Bigelow Aerospace), capitalizing on planned launches to the International Space Station. Determine the necessary improvements to attract future launch capabilities at MARS. Double the annual number of launches from MARS by 2018.
- Lead regional economic development efforts on the Lower Eastern Shore to support Wallops. Engage the Greater Salisbury Committee and other local stakeholders in developing a long-term program plan to position Wallops as the premier spaceport for light- and medium-lift launches.
- Identify potential suppliers to the launch industry at MARS and work to attract the supply chain to the Lower Eastern Shore.
- Support local and regional efforts to invest in incubators, business parks or other facilities as the market for space-related contractor businesses develops.
- Encourage more linkages between Wallops and Maryland's military facilities such as the Naval Research Laboratory and the Naval Air Station Patuxent River and academic institutions including the University of Maryland Eastern Shore.

### 4. Educate and Train People for Space and Earth Sciences Sectors

Consistent with STEM initiatives throughout Maryland's technology sectors, build onto these existing efforts to prepare students for careers in space and earth sciences.

#### Recommendations | Workforce and Education

- Support funding at University System of Maryland institutions, the Historically Black Colleges and Universities and other Maryland-based institutions with an historic expertise in space science and earth science. Attract post-secondary degree scholars for space and satellite study and research.
- Coordinate state workforce development investments in STEM education with private sector initiatives of industry employers with the Governor's Workforce Investment Board and the Maryland Space Business Roundtable.
- Develop a statewide middle and high school program to attract students to scientific fields related to the space industry. Partner with Maryland's public schools system – the nation's best – to develop a magnet high school focused on the space industry.
- Expand Maryland's leadership role in space education through the Goddard Space Flight Center, the Space Telescope Science Institute's renowned Hubble Space Telescope education program, JHU's Maryland Space Grant Consortium, and not-for-profit entities such as the Association for Research in Astronomy and the Universities Space Research Association.
- Support the development of the proposed Maryland Science, Exploration and Education Center.